

# Session II: Introduction to Human Capital

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# 1 Questions

- Becker
  - What is human capital, what kinds of human capital are discussed
    - \* training, education, health, morale, etc.
  - What is the basic model (NPV etc., see below)
  - Go through the stylized facts find the answers given by Becker (see below)
- Lazear
- Ben-Porath

## 2 Becker

### 2.1 Stylized Facts

1. Earnings typically increase with age at a decreasing rate. Both the rate of increase and the rate of retardation tend to be positively related the level of skill.  
UU is the untrained person, TT trained person (first paying for, then collecting

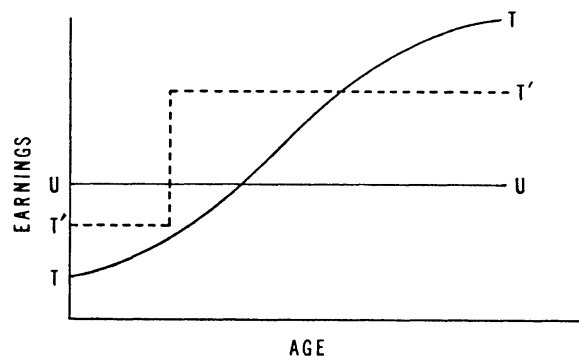


Figure 1: from Becker, p.15

rent from training). Difference between UU and TT greater the greater the cost of and return from training. Not only does training make the curve steeper, but also more concave. Extreme case TT'.

2. Unemployment rates tend to be negatively related to the level of skill
  - market demand,  $MP...$
3. Firms in underdeveloped countries appear to be more "paternalistic" toward employees than those in developed countries
  - investment in activities outside the job are done when an increase in productivity is the result
  - e.g. health, anti-alcoholism

- thus, this "paternalistic" behavior results from typical behavior outside the firm!
4. Younger persons change jobs more frequently and receive more on-the-job training than older persons
    - decisions regarding human capital are NPV decisions
    - therefore, they are driven by the time-frame of the decision (on-the-job training)
  5. The distribution of earnings is positively skewed, especially among professional and other skilled workers
  6. Able persons receive more education and other kinds of training than others
    - higher  $MP$ ...
  7. The division of labour is limited by the extent of the market
    - a larger market generates *incentives* for more specialization, as higher investments in education are rewarded by higher wages
    - thus, a "larger market" implies more demand for specialized skills...
  8. the typical investor in human capital is more impetuous and thus more likely to err than is the typical investor in tangible capital

## 2.2 Basic Model

$$MP = w \quad (1)$$

Workers have different unique productivities (wages) in each period.

$$MP_t = w_t \quad (2)$$

Training lowers current receipts (R) and raises current expenditures (E). However this trend is reversed for future periods. Therefore: NPV consideration.

$$\sum_{t=0}^{n-1} \frac{R_t}{(1+i)^{t+1}} = \sum_{t=0}^{n-1} \frac{E_t}{(1+i)^{t+1}} \quad (3)$$

Now we only have training in the first period; Expenditures in first period are wages + cost of training (k); afterwards only wage. Receipts in all periods is MP.

$$MP_0 + \sum_{t=0}^{n-1} \frac{MP_t}{(1+i)^t} = W_0 + k + \sum_{t=0}^{n-1} \frac{W_t}{(1+i)^t} \quad (4)$$

We define term  $G$

$$G = \sum_{t=1}^{n-1} \frac{MP_t - W_t}{(1+i)^t} \quad (5)$$

Now equation (4) becomes

$$MP_0 + G = W_0 + k \quad (6)$$

Now we need to include the fact that training takes away time from production. ( $MP'_0$  what could have been produced,  $MP_-$  what was actually produced,  $C$  is the sum of opportunity cost and the outlays on training) Equation (6) becomes

$$MP'_0 + G = W_0 + C \quad (7)$$

We see that  $G$  is the excess of future receipts over future outlays (a notion of return on training). Optimality condition:  $G = C$  (return equals cost)

### 2.2.1 General Training

**General Training:** This kind of training generally increases the  $MP$  of the worker. Since the worker can switch jobs, he will have to bear the costs of this kind of training.

Hence,  $MP$  and  $W$  are raised by the same amount!  $MP_t = W_t \forall t$

$$G = \sum_{t=1}^{n-1} \frac{MP_t - W_t}{(1+i)^t} = 0 \quad (8)$$

Thus, eq. (7) becomes

$$MP'_0 = W_0 + C \quad (9)$$

$$\rightarrow W_0 = MP'_0 - C \quad (10)$$

### 2.2.2 Specific Training

**Specific Training:** This kind of training only increases the  $MP$  of the worker for the specific firm. Consequently, in this extreme case firms are willing to pay for the training, since the investment is offset by increases in profit due to higher  $MP$  of the workers. On the other hand, workers will not be willing to invest, since they have "no gain" from this kind of investment. The gain is fully absorbed by the firm!